



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: 5030-0001.24

In re patent application of

UNGER, EVAN C. et al.

Serial No. 09/912,609

Filed: July 25, 2001

For: NOVEL TARGETED DELIVERY SYSTEMS FOR BIOACTIVE AGENTS

#7
AKD
8-21-03

STATEMENT TO SUPPORT FILING AND SUBMISSION IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Mail Stop SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same.

Respectfully submitted,

July 25, 2003

Date

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SEQUENCE LISTING

<110> UNGER, EVAN C.

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RAMASWAMI, VARADARAJAN
ROMANOWSKI, MAREK J.

<120> NOVEL TARGETED DELIVERY SYSTEMS FOR BIOACTIVE AGENTS

<130> 5030-0001.24

<140> 09/912,609
<141> 2001-07-25

<150> 09/703,474
<151> 2000-10-31

<150> 09/478,124
<151> 2000-01-05

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<170> PatentIn Ver. 2.1

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Gly Tyr

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Pro Lys

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Pro Pro Phe Arg Pro Pro Ile Arg Pro Pro Ile Phe Pro Pro Ile Arg
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Pro Pro Phe Arg Pro Pro Leu Arg Phe Pro
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Pro Phe Pro Arg Pro Gly Pro Arg Pro Ile Pro Arg Pro Leu Pro Phe
35 40 45

Phe Arg Pro Gly Pro Arg Pro Ile Pro Arg Pro
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Leu Ala Arg Gly
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Ala Ile Ala Arg Gly
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Ala Ile Ala Arg Gly
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Leu Ala Lys Gly Leu Ala Glu His Phe Ala Asn
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Cys

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Thr Gln Ile Ala Lys
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Lys Ala Leu
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Asn Val Ala Ala Thr Ala Arg Gly
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Ala Leu Ala Lys
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Cys Arg Cys Tyr Ser
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Cys Cys Arg
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Glu Arg Met Asn Gly Thr Cys Arg Lys Gly His Leu Met Tyr Thr Leu
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Cys Cys Arg
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Arg

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Arg

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Leu Gly Thr Cys Leu Phe Gln Asn Arg Val Tyr Thr Phe Cys Cys
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<210> 77
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Gly Thr Cys Ile Tyr Gln Gly Arg Leu Trp Ala Phe Cys Cys
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Thr Cys Ile Tyr Gln Gly Arg Leu Trp Ala Phe Cys Cys
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Arg

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Ala Gly Phe Cys Arg Ile Arg Gly Arg Ile His Pro Leu Cys Cys Arg
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Cys Pro Gly His Met Ile Gln Ile Gly Ile Cys Phe Arg Pro Arg Val
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Lys Cys Cys Arg Ser Trp
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20 25 30

Arg Ile Lys Cys Cys Arg Ser Trp
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Cys Pro Gly Ser Met Lys Gln Ile Gly Thr Cys Val Gly Arg Ala Val
20 25 30

Lys Cys Cys Arg Lys Lys
35

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 86

Ala Thr Cys Asp Leu Leu Ser Gly Thr Gly Ile Asn His Ser Ala Cys
1 5 10 15

Ala Ala His Cys Leu Leu Arg Gly Asn Arg Gly Gly Tyr Cys Asn Gly
20 25 30

Lys Ala Val Cys Val Cys Arg Asn
35 40

<210> 87
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 87
Gly Phe Gly Cys Pro Leu Asp Gln Met Gln Cys His Arg His Cys Gln
1 5 10 15

Thr Ile Thr Gly Arg Ser Gly Gly Tyr Cys Ser Gly Pro Leu Lys Leu
20 25 30

Thr Cys Thr Cys Tyr Arg
35

<210> 88
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 88
Gly Phe Gly Cys Pro Leu Asn Gln Gly Ala Cys His Arg His Cys Arg
1 5 10 15

Ser Ile Arg Arg Arg Gly Gly Tyr Cys Ala Gly Phe Phe Lys Gln Thr
20 25 30

Cys Thr Cys Tyr Arg Asn
35

<210> 89
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 89
Ala Leu Trp Lys Thr Met Leu Lys Lys Leu Gly Thr Met Ala Leu His
1 5 10 15

Ala Gly Lys Ala Ala Leu Gly Ala Ala Asp Thr Ile Ser Gln Thr Gln
20 25 30

<210> 90

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 90

Gly Lys Pro Arg Pro Tyr Ser Pro Arg Pro Thr Ser His Pro Arg Pro
1 5 10 15

Ile Arg Val

<210> 91

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 91

Gly Ile Phe Ser Lys Leu Gly Arg Lys Lys Ile Lys Asn Leu Leu Ile
1 5 10 15

Ser Gly Leu Lys Asn Val Gly Lys Glu Val Gly Met Asp Val Val Arg
20 25 30

Thr Gly Ile Asp Ile Ala Gly Cys Lys Ile Lys Gly Glu Cys
35 40 45

<210> 92

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 92

Ile Leu Pro Trp Lys Trp Pro Trp Trp Pro Trp Arg Arg
1 5 10

<210> 93

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 93
Phe Lys Cys Arg Arg Trp Gln Trp Arg Met Lys Lys Leu Gly Ala Pro
1 5 10 15

Ser Ile Thr Cys Val Arg Arg Ala Pro
20 25

<210> 94
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 94
Ile Thr Ser Ile Ser Leu Cys Thr Pro Gly Cys Lys Thr Gly Ala Leu
1 5 10 15

Met Gly Cys Asn Met Lys Thr Ala Thr Cys His Cys Ser Ile His Val
20 25 30

Ser Lys

<210> 95
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 95
Thr Ala Gly Pro Ala Ile Arg Ala Ser Val Lys Gln Cys Gln Lys Thr
1 5 10 15

Leu Lys Ala Thr Arg Leu Phe Thr Val Ser Cys Lys Gly Lys Asn Gly
20 25 30

Cys Lys

<210> 96
<211> 56
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 96
Met Ser Lys Phe Asp Asp Phe Asp Leu Asp Val Val Lys Val Ser Lys
1 5 10 15

Gln Asp Ser Lys Ile Thr Pro Gln Trp Lys Ser Glu Ser Leu Cys Thr
20 25 30

Pro Gly Cys Val Thr Gly Ala Leu Gln Thr Cys Phe Leu Gln Thr Leu
35 40 45

Thr Cys Asn Cys Lys Ile Ser Lys
50 55

<210> 97
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 97
Lys Tyr Tyr Gly Asn Gly Val His Cys Thr Lys Ser Gly Cys Ser Val
1 5 10 15

Asn Trp Gly Glu Ala Phe Ser Ala Gly Val His Arg Leu Ala Asn Gly
20 25 30

Gly Asn Gly Phe Trp
35

<210> 98
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 98
Gly Ile Gly Lys Phe Leu His Ser Ala Gly Lys Phe Gly Lys Ala Phe
1 5 10 15

Val Gly Glu Ile Met Lys Ser
20

<210> 99
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 99
Gly Ile Gly Lys Phe Leu His Ser Ala Lys Lys Phe Gly Lys Ala Phe
1 5 10 15

Val Gly Glu Ile Met Asn Ser
20

<210> 100
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 100
Gly Met Ala Ser Lys Ala Gly Ala Ile Ala Gly Lys Ile Ala Lys Val
1 5 10 15

Ala Leu Lys Ala Leu
20

<210> 101
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 101
Gly Val Leu Ser Asn Val Ile Gly Tyr Leu Lys Lys Leu Gly Thr Gly
1 5 10 15

Ala Leu Asn Ala Val Leu Lys Gly
20

<210> 102
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 102
Gly Trp Ala Ser Lys Ile Gly Gln Thr Leu Gly Lys Ile Ala Lys Val
1 5 10 15

Gly Leu Lys Glu Leu Ile Gln Pro Lys
20 25

<210> 103
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 103
Ile Asn Leu Lys Ala Leu Ala Ala Leu Ala Lys Lys Ile Leu
1 5 10

<210> 104
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 104
Gly Ile Gly Ala Val Leu Lys Val Leu Thr Thr Gly Leu Pro Ala Leu
1 5 10 15

Ile Ser Trp Ile Lys Arg Lys Arg Gln Gln
20 25

<210> 105
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 105
Ala Thr Cys Asp Leu Leu Ser Gly Thr Gly Ile Asn His Ser Ala Cys
1 5 10 15

Ala Ala His Cys Leu Leu Arg Gly Asn Arg Gly Gly Tyr Cys Asn Gly
20 25 30

Lys Gly Val Cys Val Cys Arg Asn
35 40

<210> 106
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 106
Ala Thr Cys Asp Leu Leu Ser Gly Thr Gly Ile Asn His Ser Ala Cys
1 5 10 15

Ala Ala His Cys Leu Leu Arg Gly Asn Arg Gly Gly Tyr Cys Asn Arg
20 25 30

Lys Gly Val Cys Val Arg Asn
35

<210> 107
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 107
Arg Arg Trp Cys Phe Arg Val Cys Tyr Arg Gly Phe Cys Tyr Arg Lys
1 5 10 15

Cys Arg

<210> 108
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 108
Arg Arg Trp Cys Phe Arg Val Cys Tyr Lys Gly Phe Cys Tyr Arg Lys
1 5 10 15

Cys Arg

<210> 109
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 109
Arg Gly Gly Arg Leu Cys Tyr Cys Arg Arg Arg Phe Cys Val Cys Val
1 5 10 15

Gly Arg

<210> 110
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 110
Arg Gly Gly Arg Leu Cys Tyr Cys Arg Arg Arg Phe Cys Ile Cys Val
1 5 10 15

<210> 111
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 111
Arg Gly Gly Gly Leu Cys Tyr Cys Arg Arg Arg Phe Cys Val Cys Val
1 5 10 15

Gly Arg

<210> 112
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 112
Val Thr Cys Asp Leu Leu Ser Phe Lys Gly Gln Val Asn Asp Ser Ala
1 5 10 15

Cys Ala Ala Asn Cys Leu Ser Leu Gly Lys Ala Gly Gly His Cys Glu
20 25 30

Lys Gly Val Cys Ile Cys Arg Lys Thr Ser Phe Lys Asp Leu Trp Asp
35 40 45

Lys Tyr Phe
50

<210> 113
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 113
Gly Trp Leu Lys Lys Ile Gly Lys Lys Ile Glu Arg Val Gly Gln His
1 5 10 15

Thr Arg Asp Ala Thr Ile Gln Gly Leu Gly Ile Ala Gln Gln Ala Ala
20 25 30

Asn Val Ala Ala Thr Ala Arg
35

<210> 114
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 114
Gly Trp Leu Lys Lys Ile Gly Lys Lys Ile Glu Arg Val Gly Gln His
1 5 10 15

Thr Arg Asp Ala Thr Ile Gln Val Ile Gly Val Ala Gln Gln Ala Ala
20 25 30

Asn Val Ala Ala Thr Ala Arg
35

<210> 115
<211> 47
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 115
Ser Asp Glu Lys Ala Ser Pro Asp Lys His His Arg Phe Ser Leu Ser
1 5 10 15

Arg Tyr Ala Lys Leu Ala Asn Arg Leu Ala Asn Pro Lys Leu Leu Glu
20 25 30

Thr Phe Leu Ser Lys Trp Ile Gly Asp Arg Gly Asn Arg Ser Val
35 40 45

<210> 116

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 116

Lys Trp Cys Phe Arg Val Cys Tyr Arg Gly Ile Cys Tyr Arg Arg Cys
1 5 10 15

Arg

<210> 117

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 117

Arg Trp Cys Phe Arg Val Cys Tyr Arg Gly Ile Cys Tyr Arg Lys Cys
1 5 10 15

Arg

<210> 118

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 118

Lys Ser Cys Cys Lys Asp Thr Leu Ala Arg Asn Cys Tyr Asn Thr Cys
1 5 10 15

Arg Phe Ala Gly Gly Ser Arg Pro Val Cys Ala Gly Ala Cys Arg Cys
20 25 30

Lys Ile Ile Ser Gly Pro Lys Cys Pro Ser Asp Tyr Pro Lys
35 40 45

<210> 119
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 119
Gly Gly Lys Pro Asp Leu Arg Pro Cys Ile Ile Pro Pro Cys His Tyr
1 5 10 15

Ile Pro Arg Pro Lys Pro Arg
20

<210> 120
<211> 63
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 120
Val Lys Asp Gly Tyr Ile Val Asp Asp Val Asn Cys Thr Tyr Phe Cys
1 5 10 15

Gly Arg Asn Ala Tyr Cys Asn Glu Glu Cys Thr Lys Leu Lys Gly Glu
20 25 30

Ser Gly Tyr Cys Gln Trp Ala Ser Pro Tyr Gly Asn Ala Cys Tyr Cys
35 40 45

Lys Leu Pro Asp His Val Arg Thr Lys Gly Pro Gly Arg Cys His
50 55 60

<210> 121
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 121
Gly Gly Gly Arg Gly Asp Ser
1 5

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<210> 122
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
      sequence

<400> 122
ggcgggtggga gaggagatag t                                21

<210> 123
<211> 1701
<212> DNA
<213> Homo sapiens

<400> 123
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caacttagtct tactcttcta tggcctactt tctactgcta tttgtttac tcattgttacc 120
catcttatct ccctcagtgt gtgagacgct ggcatcagat ttggcatctc ccacacactc 180
aacattatgt gttgcacaca gtaggtactc aatacatgca agttttctgtat atagatattt 240
tccttagtcat ctgtggcacc tgctatatcc tactgaaaat taccaaataatg caattaactt 300
caattttaca tttgggattt acagaaaaata actctcttc caagaaatgc ataacaattt 360
agctaggc aatgccagg tccgagttaaatg acatataatgc gtttcgtatcg cgataaggat 420
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aaaccttttc gtttagcaa cccaaatctgc tccccttctc tggcctctt ctctcctttt 540
gttggtagac gacttcagcc tctgtcctt aattttaaag tttatggccc acttgtaccc 600
ctcgctttt ggtgatttag agatttcaa agcctgctct gacacagact ctcccttgg 660
ttgcaacttc tctactttgg ggtggaaacg gcttctccgt tttgaaacgc tagcggggaa 720
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caccacgcgttgc cccgcgttgc cccgcgttgc cccgcgttgc cccggccactt 1560
caaggacccc aaggccgtgt actgcaaaaa cgggggccttc ttccctgcgc tccacccca 1620
cgcccgagtt gacgggggtcc gggagaagag cgaccctcac agttagtgcc gaccgcgtct 1680
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<210> 124
<211> 22
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 124
agacatataat gcgcttcgat cg

22

<210> 125
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 125
ggcggagtaa aggtaaagct ga

22

<210> 126
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 126
Val Val Val Val Val Lys
1 5

<210> 127
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 127
Val Val Val Val Val
1 5

<210> 128
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 128
Lys Lys Lys Lys
1

<210> 129
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 129
Lys Val Val Val Val Val
1 5

<210> 130
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 130
Cys Arg Gly Asp Ser Leu Leu Leu Leu Leu Leu Leu Leu Leu
1 5 10 15

<210> 131
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 131
Leu Leu Leu Leu Leu Leu Leu Leu Leu
1 5 10